**Exhibit A-1**

ORIGINAL Preliminary Analysis of Infringement of U.S. Patent No. 6,703,963

Princeps Interface Technologies LLC ("Princeps"), owner of U.S. Patent No. 6,703,963 (the "'963 patent") entitled "Universal Keyboard", provides this preliminary and exemplary infringement analysis with respect to infringement of the '963 patent by Motorola Mobility LLC ("Motorola" or "Defendant"). Motorola directly infringes the '963 patent in violation of 35 U.S.C. § 271(a) by selling, offering to sell, making, using, and/or importing instrumentalities which embody the claimed features of the patented invention. Princeps contends that based on currently available information, Princeps is aware that Motorola, at a minimum, has sold, offered for sale, made, used, and/or imported at least the following products and services: Motorola devices, such as the Motorola "Moto G7" and other "Moto" models, such as the Moto X, Moto Z and Moto E, which operate using the Android operating system (produced by Google and re-sold in retail outlets by Motorola the "Accused Instrumentalities"). All the current versions of these devices (i.e., the Moto G7 and other Moto models, such as the Moto X, Moto Z and Moto E) all use the current version of the Android operating system, shipping with Android 9.0 "Pie". The Android operating system utilizes applications with infringing keyboard functions, such as the Motorola proprietary apps for Moto Messages and the Moto Email. Furthermore, these Motorola proprietary apps have been available on earlier versions of the Motorola devices since as early as 2012 when Lenovo purchased Motorola Mobility LLC which then introduced the Moto X, Moto G, Moto M and other Moto series of smartphones. (*See* https://en.wikipedia.org/wiki/Motorola_Moto) Therefore, the infringement has been occurring since at least that time.

Unless otherwise noted, Princeps believes and contends that each element of each claim asserted herein is literally met through Motorola's provision (e.g., making, using and/or selling) of the Accused Instrumentalities. However, to the extent that Motorola attempts to allege that any asserted claim element is not literally met, Princeps believes and contends that such elements are met under the doctrine of equivalents. More specifically, in its investigation and analysis of the Accused Instrumentalities sold, offered for sale, made, used, and/or imported by Motorola, Princeps did not identify any substantial differences between the elements of the patent claims and the corresponding features of the Accused Instrumentalities, as set forth herein. In each instance, the identified feature of the Accused Instrumentalities performs at least substantially the same function in substantially the same way to achieve substantially the same result as the corresponding claim element. Princeps notes that the present claim chart and analysis are necessarily preliminary because Princeps has not received any discovery from Motorola, nor has Motorola disclosed any analysis in support of any purported non-infringement positions. Further, Princeps does not have the benefit of claim construction or expert discovery. Princeps hereby specifically reserves the right to supplement and/or amend the positions taken in this preliminary and exemplary infringement analysis, including with respect to literal infringement and infringement under the doctrine of equivalents, if and when warranted by further information obtained by Princeps prior to or during the pendency of the litigation, including information adduced through fact discovery, claim construction, expert discovery, and/or further analysis. Nothing in this preliminary and exemplary infringement analysis constitutes an implicit or explicit proposal regarding the construction of any claim term or phrase.

Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Motorola G7 Smartphone with Universal Keyboard Technology

Motorola, provides and sells several android smartphones, along with pre-installed Google Keyboard (Gboard). The Gboard in Motorola smartphones utilizes a universal keyboard technology with functional mode controls, at least one domain control and a plurality of input keys associated with specific domain level values based on a selected functional mode. The keyboard technology utilizes function-specific displays indicating domain-level values for a selected functional mode and domain-level combination. The input keys and the domain control are simultaneously presented by the Motorola phone and Android operating system. The universal keyboard technology permits Motorola to provide a variety of keyboard and layout options to users of the Moto G7 smartphone.
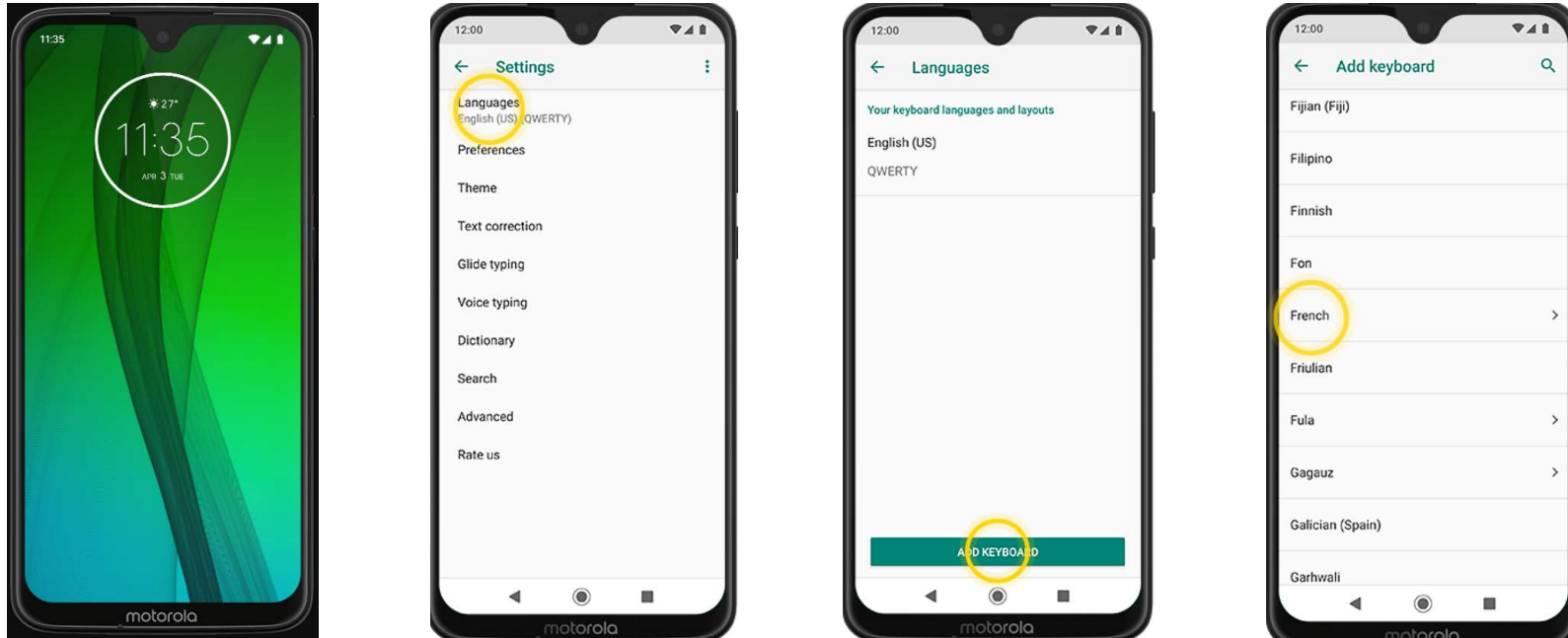
Sources: https://videotron.tmtx.ca/en/topic/Moto_G7/changing_the_keyboards_language.html#step=9 "Changing the Keyboard's Language"

See also: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf at Page 190 of 220 "Add language to keyboard"
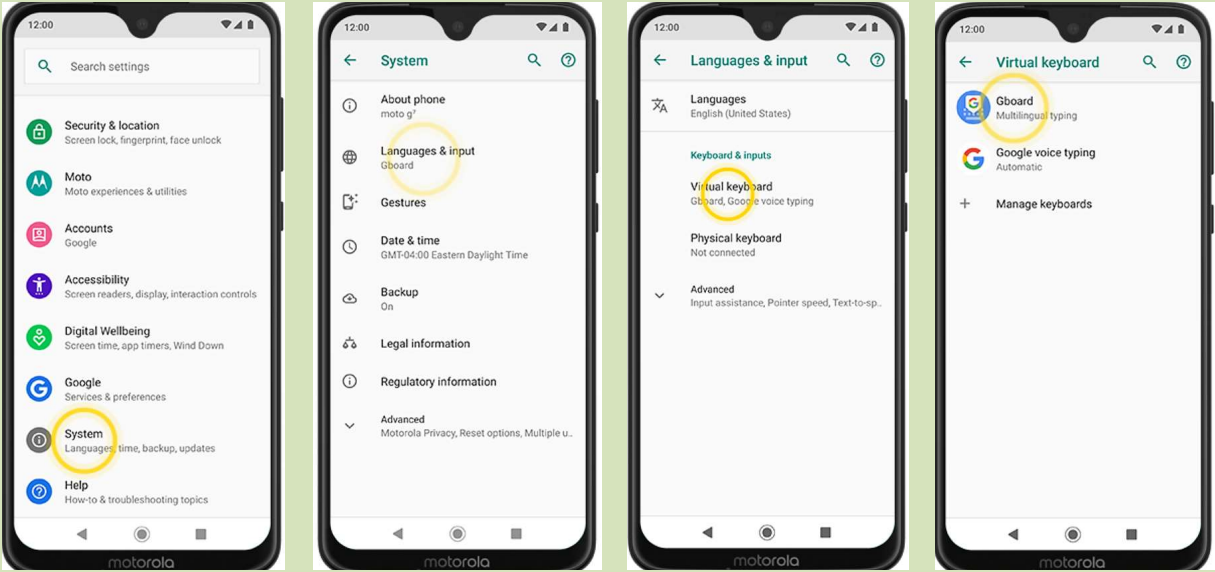
See also: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf at Page 52 of 220 "Open and close keyboard"

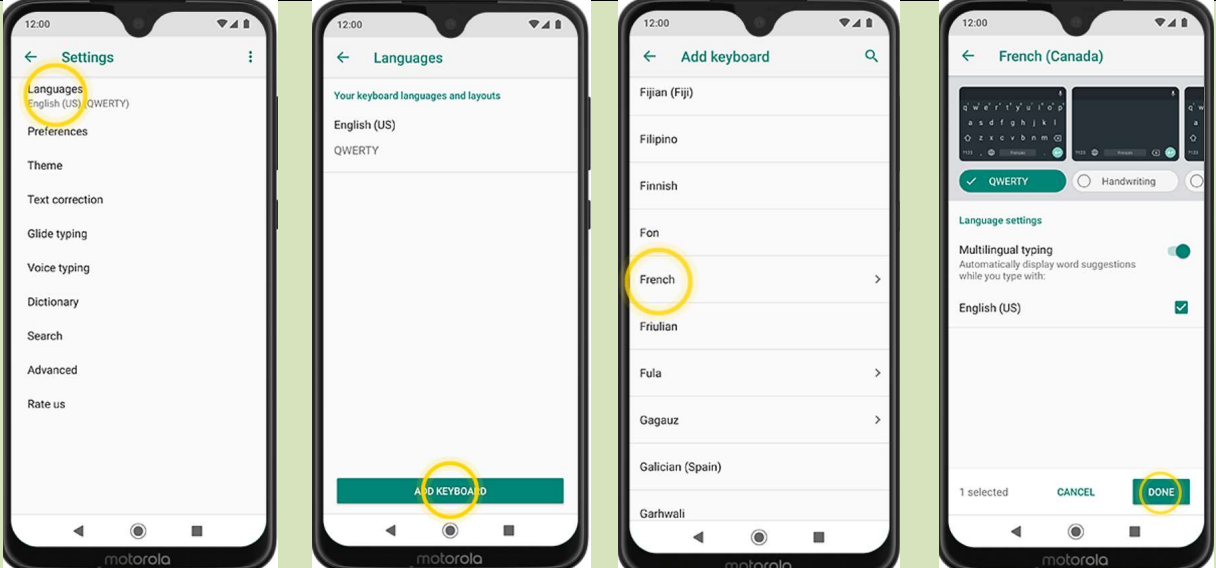Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Claim	US Patent 6,703,963	Description of the Infringement
Indep. Cl. 1 1-p	An information input device, comprising:	Motorola, provides and sells several models of smartphones, here the Moto G7 smartphone is taken as information input devices utilizing various versions of the Android operating system: Source: https://www.motorola.com/us/products/moto-g-gen-7 See Also: https://www.motorola.com/us/products/moto-g-gen-7#specs "Performance"

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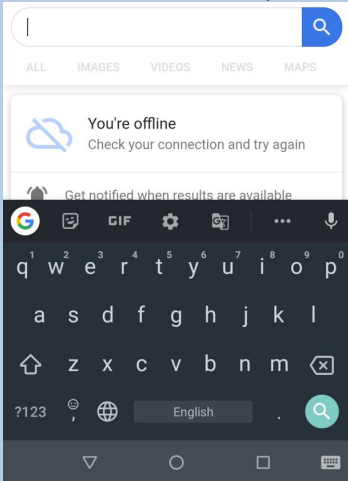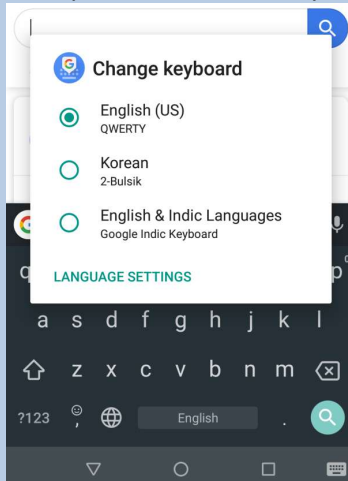Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)
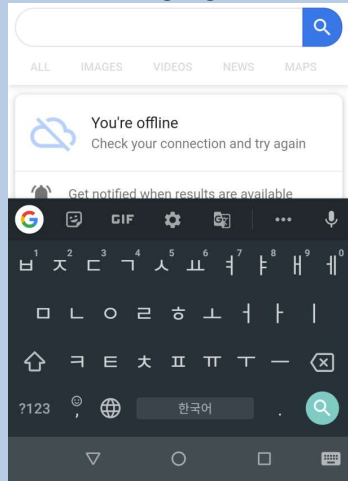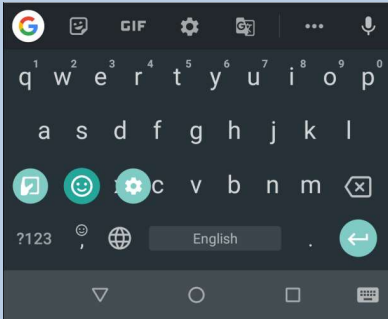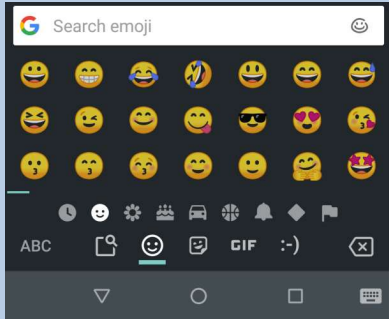
Claim	US Patent 6,703,963	Description of the Infringement
1-a	a functional mode control for selecting a first functional mode of operation of multiple functional modes of operation by the input device;	In Motorola G7 smartphone, the "functional mode control" can be any icon for activating an installed application which relies upon a keyboard for accepting input information data. Such applications can be the Moto "Messages" or "Gmail" app, or third-party apps which utilize a keyboard for accepting input data. Source: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf at Page 70 of 220 "About your apps" See also: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf at Page 91 of 220 "Read, send, manage text messages" See also: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf at Page 98 of 220 "Read, send, manage emails"

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Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Claim	US Patent 6,703,963	Description of the Infringement
		According to the patent, the functional mode control may also be used to set different functional modes of operation, such as for enabling different keyboards for character sets of different languages or different sets of symbols: which the keyboard is serving as an input device. For example, the functional mode of operation is selected, by way of example, from the group consisting of: an English alphanumeric keyboard, a non-English alphanumeric keyboard, telephone, calculator, card reader, text editing, internet navigation, an application-specific mode associated with the use of a particular software application and a mode associated with the control of an electronic device. Additionally, in embodiments of the invention, the keyboard 1 operates concurrently in more than one functional mode of operation. For example, the keyboard may be concurrently in both the E-mail and Alphanumeric functionalities to facilitate drafting an e-mail message. Other exemplary combinations of multiple simultaneous functional modes of operation include Edit/E-mail, Edit/Alphanumeric, Tele/www, Tele/Alpha, or E-mail/Tele/www. Source: US Patent 6,703,963 (See column 4, lines 4-19) In the Moto G7 smartphone, different functional modes may be selected: Tip: If you installed other keyboards, you'll see ⌨ next to the navigation buttons when you're typing. To switch to a different keyboard, touch ⌨. See also: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf at Page 52 of 220 "Open and close keyboard"

Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Claim	US Patent 6,703,963	Description of the Infringement
		In the Moto G7 smartphone, the "Settings" Application (with sub-options) can also be used to change aspects of the functional modes in, for example, the keyboard options from those that are available through "Settings" in the Android. As shown below, under "Settings", "System", "Language & input", "Virtual Keyboard", "Gboard" and "Languages" functional mode selections can be controlled to determine selections for language, text shortcuts and other virtual keyboards. The select options can be used in various applications such as email or messaging.

Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)
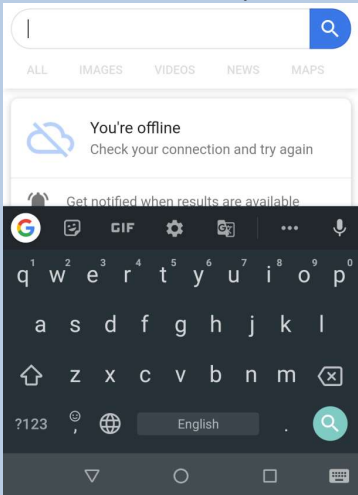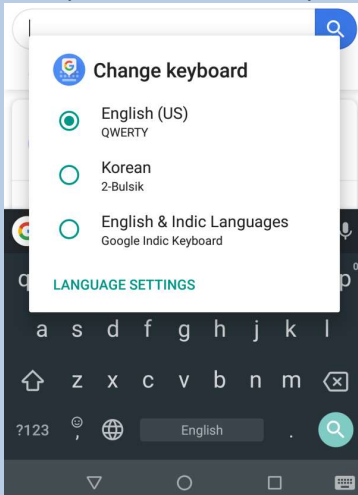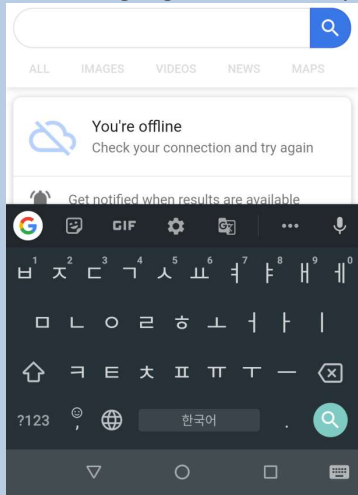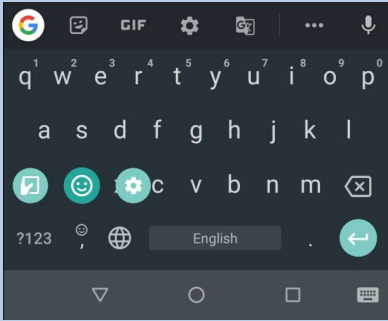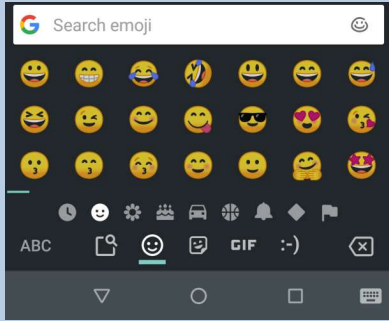
Claim	US Patent 6,703,963	Description of the Infringement
		Sources: https://videotron.tmtx.ca/en/topic/Moto_G7/changing_the_keyboards_language.html#step=9 "Changing the keyboard's language" "If you want a keyboard for a language that isn't a display language: 1. Go to **Settings > System > Languages & input > Virtual keyboard.** 2. Touch **Gboard > Languages**. 3. Touch **ADD KEYBOARD**. 4. Select the language. 5. Touch Done. Then, switch between languages on the keyboard by touching ⊕." Also see: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf 190 of 220 "Add language to keyboard"

Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

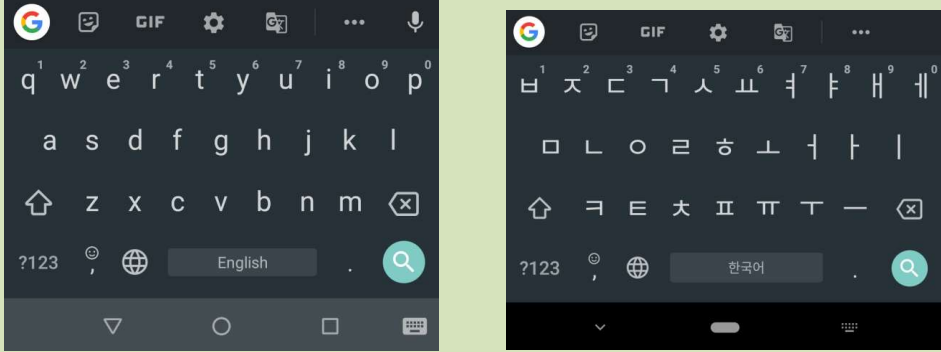| Claim	US Patent 6,703,963	Description of the Infringement

1-b	a domain control for selecting one of multiple domain levels within the first functional mode wherein each domain level is associated with a set of domain-level values;	The "domain control" in the Moto G7 smartphone's Keyboard (Gboard) are the symbols for a Globe and Emoji appearing in the lower left location of the smartphone as shown below. These symbols are activated by touching them on the touch screen to control the "domain level" (i.e., the selection of a set of language or emoji symbols) associated with the selected symbol set at each domain level.
		
		 (Snapshot taken from Motorola Smartphone during testing Gboard)
		
		 "If you have added multiple languages as a system language in your phone settings, keyboards and text suggestions are available for those languages:
		 • When using a keyboard language other than your primary system language, available keyboard languages are shown on the spacebar and can be activated using the globe or the space bar.
		 • To toggle between languages, touch the globe symbol ⊕.
		 • To see a list of available keyboards, touch & hold the globe symbol ⊕ or the spacebar."
		 Source: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf Page 53 of 220
		 "Type in multiple languages"
		 "1. On your Android device, open any app where you can write, like Gmail or Keep.
		  2. Tap where you can enter text.
		  3. Tap Emoji Emoji. From here, you can:
		       • Insert emojis: Tap one or more emojis.
		       • Insert a GIF: Tap GIF. Then choose the GIF you want.
		  4. Tap Send Send."
		 Source: https://support.google.com/gboard/answer/2842292?co=GENIE.Platform%3DAndroid&hl=en
		 "Use emojis & GIFs"

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Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)
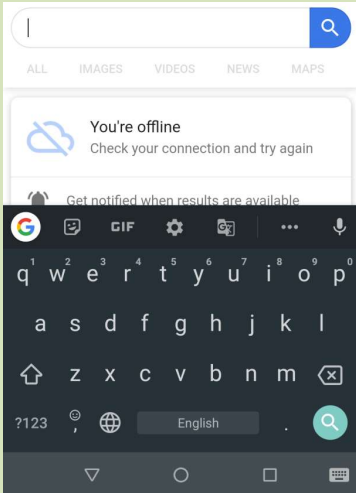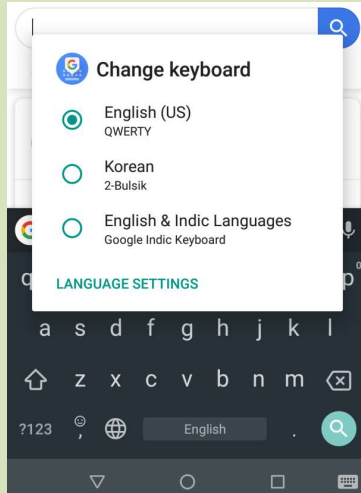
Claim	US Patent 6,703,963	Description of the Infringement
1-c	a plurality of input keys, separate and distinct from the domain control, assigned to the set of domain-level values associated with a selected domain level and functional mode,	On the Moto G7 smartphone's Keyboard (Gboard), the character sets associated with domain levels for different language character sets or emojis appear as input keys "separate and distinct" from the domain control Globe or Emoji Symbol. 1. Select Globe key 2. Tap and hold Globe key 3. Selected language characters appear 1. Tap and hold the emoji Symbol 2. Select the desired emoji (Snapshots taken from Motorola Smartphone during testing Gboard) Source: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf Page 53 of 220 "Type in multiple languages"

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Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Claim	US Patent 6,703,963	Description of the Infringement
		As shown above, although the character sets associated with different domain levels (i.e. different language character sets) change, the Globe key (i.e., the domain control) remains separate and distinct from the domain level values (the individual letters/characters in each set).
1-d	wherein each input key assigned to a domain-level value is associated with a signal, representative of the domain-level value, transmitted by the input device in response to actuation of the input key; and	See 1-c above, showing that each input key transmits a signal having a value representative of a letter in the alphabet of the country in the domain-level set for that respective country. These input keys are activated by pressing on the touchscreen of the smartphone displaying the keyboard.
1-e	a function-specific display indicating a domain-level value associated with each input key for a currently selected functional mode and domain level combination,	Each language (or symbol) specific keyboard presents a "function-specific display" of a character set associated with a specific language or a set of emojis depicting particular meanings to a user that are unique for a currently selected functional mode and domain level combination. For example, in the figures below, the functional mode includes the possibility of choosing between three domains: English (US), Emoji and Korean domain levels. Each of the English (US), Emoji and Korean domain levels present a unique set of keyboard characters within each of these domains.

Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)
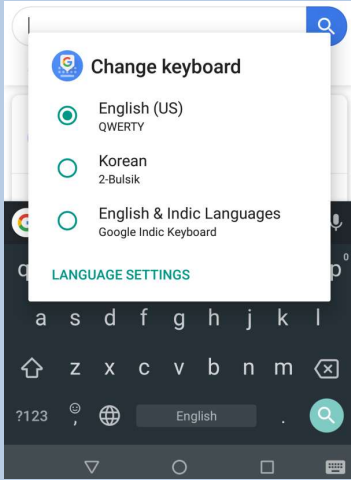
Claim	US Patent 6,703,963	Description of the Infringement
		Select Globe key / Tap and hold Globe key / Selected language characters appear Tap and hold the emoji Symbol / Select the desired emoji (Snapshots taken from Motorola Smartphone with Gboard) Source: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf Page 53 of 220 "Type in multiple languages"

Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Claim	US Patent 6,703,963	Description of the Infringement
1-f	wherein the input keys and domain control are simultaneously presented by the input device.	From 1-e above, it shows the touch-screen keyboard on the Moto G7 smartphone, the input keys and the domain control are simultaneously presented. Such as the English (US) characters and the Globe domain control shown at the same time together in left-most figure. (Snapshot taken from Motorola Smartphone with Gboard)
2	The invention as in claim 1 wherein the domain-level value assigned to an input key is determined by software associated with each functional mode.	See 1-p above, showing that the Android operating system in the Moto smartphones is software which determines what domain-level value (i.e., character) is assigned to an input key associated with any functional mode and domain-level.
3	The invention as in claim 1 wherein the domain-level value associated with an input key is assignable by a user of the input device.	"The text that you use quite often, like your address, contact number or email – can be stored and summoned with the help of simple shortcuts whenever required." Source: https://www.smartprix.com/bytes/mastering-google-gboard-keyboard-tips-tricks-shortcuts/ "Add phrases and shortcuts to GBoard"

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Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Claim	US Patent 6,703,963	Description of the Infringement
9	The invention as in claim 1 wherein each display is comprised of a touch screen.	Moto G7 smartphone incorporate touch-screen as part of the data input hardware for the devices. Source: https://www.motorola.com/us/products/moto-g-gen-7#specs "Display"
12	The invention as in claim 1 wherein the domain control comprises a second set of continuously present controls for selecting the domain level within a functional mode.	Tapping and holding the domain control "Globe" symbol will present underlying a selection of the enabled domain-levels in the Motorola G7 smartphone Keyboard (Gboard). See for example, from 1-c above, at screen 2: Select Globe key Tap and hold Globe key (Snapshots taken from Motorola Smartphone with Gboard) Source: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf Page 53 of 220 "Type in multiple languages"
Indep. Cl. 60		
60-p		See 1-p above, users of the Motorola devices operate those devices as shown in 1-p above;

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Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Claim	US Patent 6,703,963	Description of the Infringement
	A method of operating an information input device comprising	See 1-a above;
	one or more functional modes of operation	See 1-b above;
	having multiple domain levels selectable by a domain control,	See 1-c above;
	each domain level containing domain-level values, a plurality of input keys, separate and distinct from the domain control,	See 1-e above;
	having domain-level values assigned according to a current functional mode of operation and current domain level and a display to indicate the domain-level values associated with the input keys, wherein the method comprises the steps of:	

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Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Claim	US Patent 6,703,963	Description of the Infringement
60-a	first selecting a functional mode of operation of the information input device;	See 1-a above, especially: In the Moto G7 smartphone, different functional modes may be selected: "Tip: If you installed other keyboards, you'll see ⌨ next to the navigation buttons when you're typing. To switch to a different keyboard, touch ⌨." See also: https://help.motorola.com/hc/3174/90/pdf/help-moto-g7-90-global-en-us.pdf at Page 52 of 220 "Open and close keyboard"
60-b	second selecting, through the domain control, a domain level within the selected functional mode of operation; and	See 1-b above;

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Note: All internet sources last accessed and downloaded on July 30, 2019.

Motorola Mobility LLC - claim chart with respect to U.S. Patent No. 6,703,963 (the '963 patent)

Claim	US Patent 6,703,963	Description of the Infringement
60-c	actuating one or more of the input keys, associated with domain-level values corresponding to the domain level selected during the second selecting step, and	See 1-c above;
60-d	wherein the input keys and domain control are simultaneously presented by the input device.	See 1-f above.

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